

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE *#5*

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Title: SECURITY ROOM FOR INFORMATION
TECHNOLOGY FACILITIES

Based Upon: PCT/EP99/03122

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Hans Bähner

TRANSMITTAL OF SUBSTITUTE SPECIFICATION**Box PCT**

Assistant Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

Applicants have enclosed a Substitute Specification attached to a ink marked-up copy of the verified English language translation of PCT International Application PCT/EP99/03122. The ink identifies changes to the verified English language translation which are incorporated in the Substitute Specification.

The Substitute Specification includes general revisions to correct idiomatic translational errors and to provide proper headings. The undersigned states that the Substitute Specification contains no new matter.

Based Upon: PCT/EP99/03122

Applicants sincerely believe that this patent application is now in condition for prosecution before the U.S. Patent and Trademark Office.

Respectfully submitted,



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SUBSTITUTE SPECIFICATION

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SECURITY ROOM FOR INFORMATION TECHNOLOGY FACILITIES

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BACKGROUND OF THE INVENTION

Field of the Invention

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✓ This invention relates to a secure room for devices in connection with information technology, having fireproof side walls with a door, a floor and a ceiling, wherein the side walls are assembled from plate-shaped individual elements, which are arranged side-by-side, are fireproof and extend from the floor to the ceiling, and fireproof sealing elements are arranged in the joints between the individual elements having at least two fireproof layers, and the individual elements are held against each other by a connection which pushes the sealing elements together.

Description of Related Art

✓ Such a secure room is taught by Great Britain Patent Reference GB-A 504 255. In this known secure room made of insulated wall elements placed next to each other, the wall elements have several fire-protecting layers, which are inserted into a metal frame of an E-shaped profiled cross section. Sealing strips, inserted into dovetail-shaped grooves or fastened by screws or rivets are inserted between the metallic profiled frame sections made, for example, of aluminum. Asbestos is used as the material for the wall elements and the seals.

✓ A fire protection material for use in fire-protection grooves is disclosed in German Patent Reference DE-U 297 10 462, which provides imperviousness against fluids, great stability against tension and pressure without the formation of

cracks, and provides impermeability to fire and smoke in case of fire. A glass fiber material, to which expanded graphite is applied, is identified as the preferred carrier material.

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cont* ✓ A layered structure of individual elements is taught by European Patent Reference EP-A 0 458 560.

✓ In accordance with EN 1047, a secure room of this type is intended to assure, in case a fire occurs, the information technology devices are not destroyed over a defined period of time, for example 90 minutes, and can continue to operate in order to secure important control functions and data.

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miss 118 → **SUMMARY OF THE INVENTION**

✓ One object of this invention is to provide a secure room of the type mentioned above but which assures the required security for information technology devices and can be simply constructed.

✓ This object is attained by according the characteristics discussed in this specification and in the claims. A sealing element has an expanding seal which, viewed in cross section, is arranged in a central area and expands in the event of fire and, arranged laterally therefrom, are high-temperature seals which withstand temperatures up to several hundred degrees Centigrade, and the individual elements are constructed in layers with outside layers of steel arranged on exteriors with at least

two layers between them, which withstand temperatures up to several hundred degrees Centigrade.

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wnt* ✓ With such a construction the connecting points between the individual wall elements in particular, which are endangered in case of fire, are fireproofed and sealed against corrosive combustion gases and moisture, so that a temperature increase in the interior of the secure room is counteracted. This assures a seal against corrosive combustion gases and moisture.

✓ An additional protection against effects of temperature in joint areas of the wall elements is achieved because a sealing groove between the areas at the joints of the individual elements is covered at least on one of two outer sides by a sealing tape covering the sealing groove. The sealing groove is closed off with a sealing material at least on one of its areas adjoining the two outsides.

✓ The transition between the individual elements with a satisfactory sealing effect is assisted with joint sides of the individual elements having connecting tongues.

✓ A solid simple connection between the individual elements, wherein the sealing elements are pressed together for increasing the sealing effect and harmful changes in the wall elements are prevented, is achieved because a connection at outer coverings has connecting elements in the area of the sealing grooves. The connecting elements have grooves, open at the sides and tapering conically toward the top.

Closure elements, which taper toward the top, can be placed on the connecting elements of adjoining individual elements with lateral bevels and can be clampingly fixed in place.

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cont* ✓ Steps are advantageous for simple mounting and definite solid orientation of the wall elements, wherein undersides of the side walls are inserted into U-shaped floor profiles, open toward the top, and wherein the seals and the connection are covered, at least on an inside of the secure room, with profiled linings.

NW The fireproof room is further sealed because a cable duct for passing cables is installed in at least one side wall element, which has an outer packing frame with sealing modules therebetween, and the sealing modules have feed-through openings for the cables, which have inner walls that can be removed in layers in order to adapt the diameters of the feed-through openings to the various cable diameters.

BRIEF DESCRIPTION OF THE DRAWINGS

This invention is explained in greater detail in view of exemplary embodiments shown in the drawings wherein:

Fig. 1 is a perspective view of a secure room with partially cut open walls;

Fig. 2 is a cross section of a portion of the secure room installed in a room of a building;

Figs. 3a to 3d are different embodiments, of various wall elements, each in a perspective view;

Figs. 4A and 4B show a plan view and a lateral view of a connection area between wall elements;

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Fig. 5 shows a support device in a larger secure room;

Fig. 6 shows an installed door in cross section;

Fig. 7 shows a built-in element in the secure room; and

Fig. 8 shows a cable duct between the outside and the inside of the secure room.

DESCRIPTION OF PREFERRED EMBODIMENTS

In a perspective view, Fig. 1 shows, as the essential elements of a secure room 1, side walls 2 with a door 5, a ceiling 3, as well as a double-deck floor 4, wherein the side walls 2, the ceiling 3 and the floor 4 are assembled in a modular form from individual wall elements. Various components of the information or control technology are housed in the room, as well as an air-conditioning device 12 and a light fixture 7. A firefighting device 8 with reservoirs containing firefighting agents arranged on the outside, and lines and outlet openings arranged in the ceiling of the interior of the fireproof room 1, and a device 9 for removing used fire-extinguishing means, are provided in case of fire. An electronic control system 10 is arranged on the outside, and a motion sensor 11 is attached in the interior. An interruption-free

power supply 13 can furthermore be provided in the interior. A cable inlet 6 for the current supply for the electrical components arranged in the interior of the secure room 1 is installed in one side wall 2.

Ansatz

Figs. 3a to 3d show the various wall elements in the form of a side wall element S, a ceiling element D of the same width, a floor element B and a corner element E, with lateral parts that preferably correspond to the width of a side wall element S. In Figs. 2, 4A and 4B the structure of the wall elements can be seen in cross section, as well as their connecting area. Thus, the side wall elements S and the ceiling elements D, and correspondingly also the corner elements E, comprise an outer layer 2.1 or 3.1, made of sheet steel, so that a coffer-like structure is formed and several fireproof layers I, II, III of an insulating material are housed between the two outer layers 2.1 or 3.1, which has a retarding effect in case of fire, so that a maximum permissible threshold value load on the information technology device will not be exceeded for 90 minutes, for example.

The corner area between the side wall element S and the ceiling elements D is covered by means of an angled profiled lining 2.2, wherein the vertically downward oriented leg of the profiled lining 2.2 extends over the connecting area between the side wall elements S and the ceiling element D. The adjoining edges of the side wall element S and of the ceiling element D are complementarily designed in an L-shape, so that the side wall elements S and the

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ceiling elements D can be easily and clearly assembled with good sealing. Sealing means with an expansion seal 2.5 arranged in the center of the cross section, with high-temperature seals 2.6 arranged laterally of the former, with a sealing tape 2.7 arranged on the outside, and with a sealing material 2.8 provided between the sealing tape 2.7 and the high-temperature seal 2.6, are arranged between the long sides of the side wall elements S and the ceiling elements D. The critical connecting points are designed to be fireproof because of this sealing design. Connecting tongues 2.4 adjoin the sealing means at the front with respect to the wall elements.

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For the simple and assured cohesion of the wall elements in the transition areas, connecting elements 2.9 with grooves, laterally open to the outside and tapering conically toward the top, are formed on the outer layer 2.1, as shown in Figs. 4A and 4B. Correspondingly matched closure elements 14, which taper toward the top and engage the grooves, are pressed on the connecting elements 2.9, so that the sealing means are pressed together to form a tight connection. The connecting areas between the individual wall elements having the connecting elements 2.9 and the closure elements 14 are covered, preferably in the interior, by means of a profiled lining 15, which is trapezoidal in cross section. Fastening brackets 18 for built-in units can be attached to the profiled linings 15 in the room interior. The connecting areas between the wall elements do not have bores or screw holes which could endanger the fireproofing.

As shown in Fig. 2, the side wall elements S are fixed in place by means of profiled floor sections 2.3, which are anchored in the floor of the building and are U-shaped in cross section, so that the side wall elements S are securely maintained and are simple to install. The ceiling elements themselves can be fastened on the ceiling of the room by means of holders 3.2. The floor 4, designed as a double floor, has a lower floor element 4.3 and an upper floor element 4.1, which is at a distance and fixed by connecting means 4.2, and is surrounded as a whole by the side walls 2, so that good sealing assures good fire protection. The light fixture 7 can be arranged in the area of the inner edge between the side walls 2 and the ceiling 3 instead of on a suspended additional ceiling in accordance with Fig. 1, wherein a cable duct 7.1 can also be provided as shown in Fig. 5.

For the tight and fireproof closing of the door 5, a seal packing 5.3 is inserted all around into door casings 5.1, 5.2 and the door 5 is fitted and is constructed of fireproof materials. The door 5 has a door closer 5.4.

Fig. 5 shows the support of adjoining ceiling elements D by means of a profiled support 17, extending under the connection point, and of a pillar 16 which is supported under it on the floor and is anchored on the profiled support 17 by means of a head plate 16.1 and is anchored to the floor of the building by means of a foot plate 16.2. Cable conduits 7.1 are formed on both sides in the area of the profiled

support 17, and lighting fixtures, which radiate obliquely downward into the room, are there installed.

cont

The cable inlet 6 shown in Fig. 1 can be constructed in accordance with the cable duct 19, shown in Fig. 8, which has an outer packing frame 19.2, into which sealing modules 19.1 are inserted for the respective cables. After being installed, the packing frame is radially narrowed by tightening screws, so that the sealing modules 19.1 are compressed. The sealing modules 19.1 contain shells, which are placed inside each other in layers, so that they can be matched to different cable diameters.

It is possible in a simple manner by means of the described measures to assemble secure rooms of various sizes in a modular manner. The structural parts form a kit assembled of simple elements with correspondingly simple storage requirements.